

## **REMARKS**

### **INTRODUCTION**

In accordance with the foregoing, claims 6, 9, and 11 have been amended. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-27 are pending and claims 1-11 are under consideration. Reconsideration is respectfully requested.

### **ALLOWABLE SUBJECT MATTER**

In the Office Action at page 7, numbered item 8, the Examiner noted that claims 3, 4, and 5 have been allowed. Claims 3-5 remain pending and unamended.

### **REJECTION UNDER 35 U.S.C. §112**

In the Office Action at pages 2-3, numbered item 4, claims 6, 7, 9, and 11 were rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth therein. This rejection is traversed and reconsideration is requested.

Independent claims 6, 9, and 11 have been amended to provide antecedent support for the limitation "the write area." As claim 7 depends directly from claim 6, Applicant respectfully submits that independent claim 6 provides sufficient antecedent basis for "the write area" in dependent claim 7. Accordingly, Applicant respectfully submits the rejection of claims 6, 7, 9, and 11 be withdrawn.

### **REJECTION UNDER 35 U.S.C. §103**

In the Office Action at pages 3-5, numbered item 6, claims 1, 2, 8, and 10 were rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 5,944,792 to Yamato, et al. in view of U.S. Patent No. 6, 023,720 to Aref, et al. The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

Independent claim 1 is directed to an access control apparatus which processes a plurality of access requests to a storage medium. In relevant part, claim 1 recites “a scheduling unit determining a deadline of reading and writing processing for the storage medium, based on a change of a transfer rate of data which is actually received.” Independent claims 8 and 10 recite similar features.

In a non-limiting example, Figure 11 shows that when an isochronous transfer is performed, the data transfer rate changes with time depending on the ratio of inserted dummy packets. The scheduling unit 41 dynamically determines the deadline of the write/read processes depending on the transfer rate at each point in time, and sets the schedule of performing write/read processes in order from the process having the earliest deadline. This deadline is determined based on the actual transfer rate, and flexible scheduling is performed based on the deadline. Thus, the scheduling is performed based on the transfer rate of each channel. Scheduling is even performed based on the transfer rate of each channel when statistically multiplexed picture data at a variable rate is recorded/read in real time, thereby recording/reading data through a larger number of channels. See Specification at page 37, lines 3-10 and 14-22.

In the Office Action at page 4, the Examiner acknowledged that Yamato, et al. fails to teach or suggest determining a deadline of writing processes for the storage medium based on a change of a transfer rate of data which is actually received and asserts that Aref, et al. teaches this limitation. Applicant respectfully disagrees.

The Examiner cites Aref, et al. at col. 6, lines 31-37 and states that “Aref teaches determining a deadline of writing processes for the storage medium based on a change of a transfer rate of data which is actually received.” Applicant respectfully disagrees. The portion of Aref, et al. cited by the Examiner states “[i]n the event the request is a write request, the data corresponding to the request is inserted into the write buffer at the next available slot.” Further, the cited portion states that “[f]ollowing the insertion of the data into the write buffer, the **calculated value** of the arrival rate of disk write requests is updated.  $\lambda_w$  is an **estimate** of the time in which the write buffer will be filled, and is used to compute the deadlines for the write requests.” As Aref, et al. teaches that a **calculated value** and an **estimate** are used to compute the deadlines for the write requests, Applicant respectfully submits that Aref, et al. fails to teach or suggest that the deadline of writing processes for the storage medium is determined

based on a transfer rate of data which is **actually received**. Accordingly, Applicant respectfully submits that independent claims 1, 8, and 10, and claim 2, which depends directly from claim 1, patentably distinguish over the prior art for at least this reason and are in condition for allowance.

Regarding claim 2, the Examiner contends that Aref, et al. teaches that the scheduling unit determines the deadline of the reading process according to information about a deadline of which is determined when the received data is written in response to read data from the storage medium. The Examiner cited Aref, et al. at col. 12, lines 54-57, which states that “[t]he repositioning of a write request is performed only if it will result in accommodating the new read request into the read request’s scan order and with its deadline met.” Thus, Applicant respectfully submits that Aref, et al. teaches that a write request may be repositioned if the deadline of the reading process will be met, so the deadline of the reading process must be determined before repositioning of the write request is considered. The present invention, in contrast, “determines the deadline of the reading process according to information about a deadline which is determined when the received data is written in response to read data from the storage medium.” Accordingly, for at least this reason and those set forth above, Applicant respectfully submits that dependent claim 2 patentably distinguishes over the prior art and is condition for allowance.

In the Office Action, pages 7-9, numbered item 7, claims 6, 7, 9, and 11 were rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,263,411 to Kamel, et al. in view of U.S. Patent No. 6,023,720 to Aref, et al. The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

Independent claim 6 recites, in relevant part, “a determination unit determining a write position of data on the disk type storage medium in such a way that a plurality of write positions can be located close to each other in response to requests to write data into the disk type storage medium.” Independent claims 9 and 11 recite similar features.

On page 6 of the Office Action, the Examiner asserts that Kamel, et al. teaches a determination unit, citing FIG. 1, element 12, which is a Media Segment File Server. Applicant respectfully disagrees that the Kamel’s Media Segment File Server functions as a determination unit. Rather, “[t]he media segment file server 12 stores blocks of media segment files (MSFs)

that belong to a variety of video streams” Col. 3, lines 49-51. For at least this reason, Applicant respectfully submits that independent claims 6, 9, and 11, and claim 7, which depends directly from claim 6, patentably distinguish over the prior art and are in condition for allowance.

Further, the Examiner contends that Kamel, et al. teaches that the determination unit determines a write position of data in such a way that a plurality of write positions can be located close to each other and cites FIG. 2, disk queue 32 which includes entries representing requests to the disk 30, FIGS. 5A and 5B, and col. 10, lines 33-39 in support of this position. Applicant respectfully submits that FIG. 2 merely illustrates a memory buffer pool, a disk queue, and a MSFS disk. Further, disk queue 32, which includes entries representing requests to disk 30, has no function relating to determining a write position of data, much less determining a write position in such a way that a plurality of write positions can be located close to each other. Figure 5A shows that separate read and write queues service the read and write disk access. Figure 5B merely shows that the read and write queues can be consolidated into a single queue. Finally, col. 10, lines 33-39 of Kamel, et al. merely teaches a method for calculating the number of write requests ahead of a write request  $w_n$ . Applicant respectfully submits that the cited portion of Kamel, et al. is unrelated to the above-referenced feature of independent claims 6, 9, and 11. Accordingly, Kamel, et al. and Aref, et al., taken alone or in combination, fail to teach or suggest the features independent claims 6, 9, 11, and dependent claim 7. For at least these reasons, Applicant respectfully submits that independent claims 6, 9, 11 and dependent claim 7, which depends directly from claim 6, patentably distinguish over the prior art and are in condition for allowance.

## CONCLUSION

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: February 7, 2005

By: David M. Pitcher  
David M. Pitcher  
Registration No. 25,908

1201 New York Avenue, N.W.  
Suite 700  
Washington, D.C. 20005  
Telephone: (202) 434-1500  
Facsimile: (202) 434-1501